YORK®

INSTRUCTIONS
INSTALLATION and OPERATION

File: SERVICE/ICE MAKERS Manual - Instruction Section

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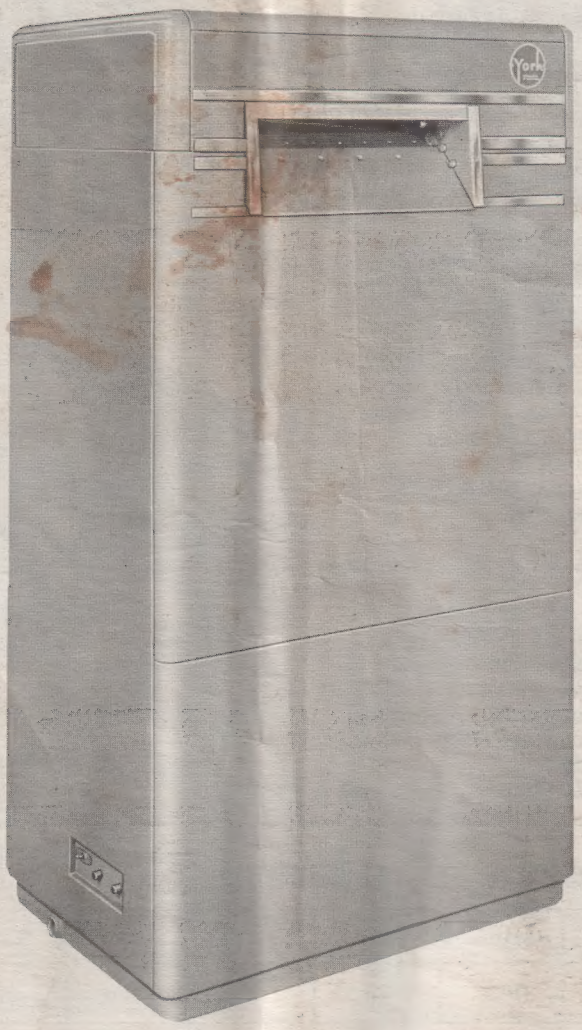
Serv. C - Int.

363

600.10-N4
(7M7-I & O)

OBIES -

AUTOMATIC ICE FLAKER
MODEL WF200 STYLE A
- WATER COOLED -



GENERAL

This instruction covers the installation and operational procedures for the Model WF-200 Style "A" Ice Flaker. This unit was previously designated as Model DER-14; therefore, the data contained in this instruction applies to both the DER-14 and WF-200 units, unless stated otherwise.

INSPECTION

Immediately, upon receipt of the unit, it should be inspected for damage incurred in transit, and if any is observed, it should be noted on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once. (See Service Instruction 2F-3).

INSTALLATION

LOCATION

The unit shall be installed in a vertical position only, and on a level floor or platform. No special foundation or isolation is required. A floor or supporting platform capable of withstanding a concentrated load of 190 pounds per square foot will be satisfactory.

Before deciding upon the final location of the unit, the limiting conditions as noted in Table 1 should be considered. Failure to observe these limiting conditions will have a detrimental effect upon the unit performance and capacity, cause equipment failure, and, in the case of clearances, prevent proper maintenance, cleaning, or replacement of components.

Drainage from the unit is by gravity. Place the unit where proper drain lines can be installed. All connections must meet local sanitary and plumbing codes.

INSTALLATION AND SELECTION OF BIN

The unit may be used to discharge the ice into an open or closed storage bin. When it is necessary to use auxiliary ice chutes, the slope shall be a minimum of 45 degrees from the horizontal. These ice chutes should be as short as possible, and no narrower than the width of the opening on the unit.

Level the bin before mounting the Ice Flaker on it.

The use of refrigerated bins is not recommended, as they may cause the ice to adhere in the ice chute, thereby damaging the unit.

When installing a unit on the second floor and discharging ice to a bin on the first floor, special precautions must be observed to prevent ice bridging in the chute. In such installations, a chute the same size as discharge opening at the top, and expanding to a larger size at the bottom should prevent ice from bridging in the chute. Unless this precaution is followed, special controls will be required to stop the unit before the ice reaches the discharge of the unit.

HANDLING

To prevent marring of the finish and/or damage to the panels, the unit should remain in the crate until it is moved to the approximate location where it will be installed. To facilitate handling, the unit is mounted on a skid, and must be moved to the operating location in a vertical position, using an approximate material handling device. The unit may not be permitted to drop, nor may it be "walked" on the corners of the crate.

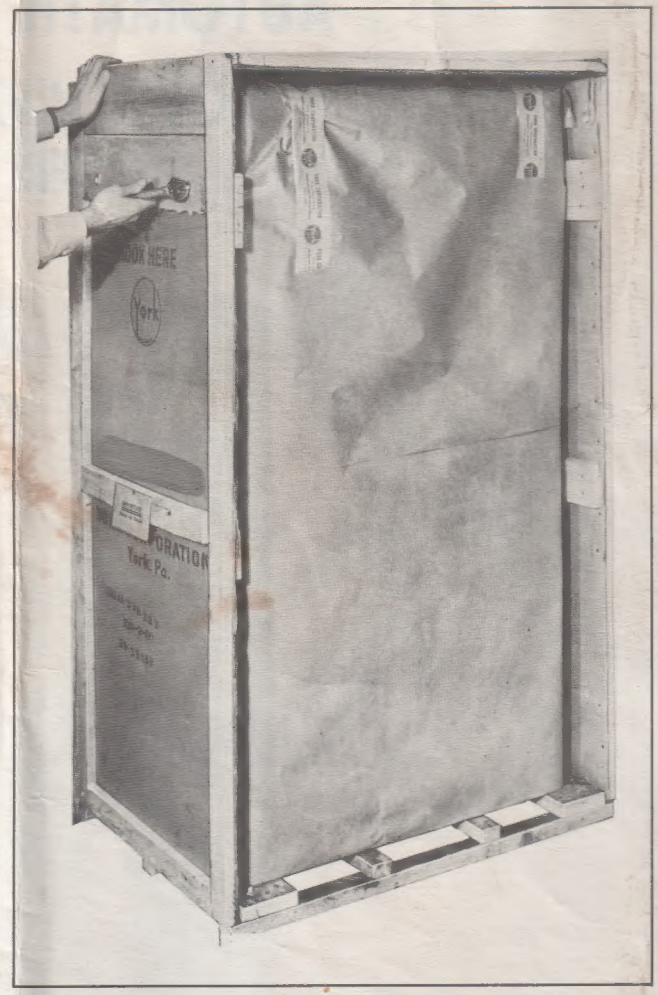


Fig. 1

TABLE 1

Ambient Air Temperature		Water Temperature		Water Pressure-Psig.		Minimum Clearance, In.			Voltage Variation %	
Max.	Min.	Max.	Min.	Max.	Min.	Top	Rear	Sides	Max.	Min.
105 F	40 F	100 F	40 F	75	30	18	12	24	252	207

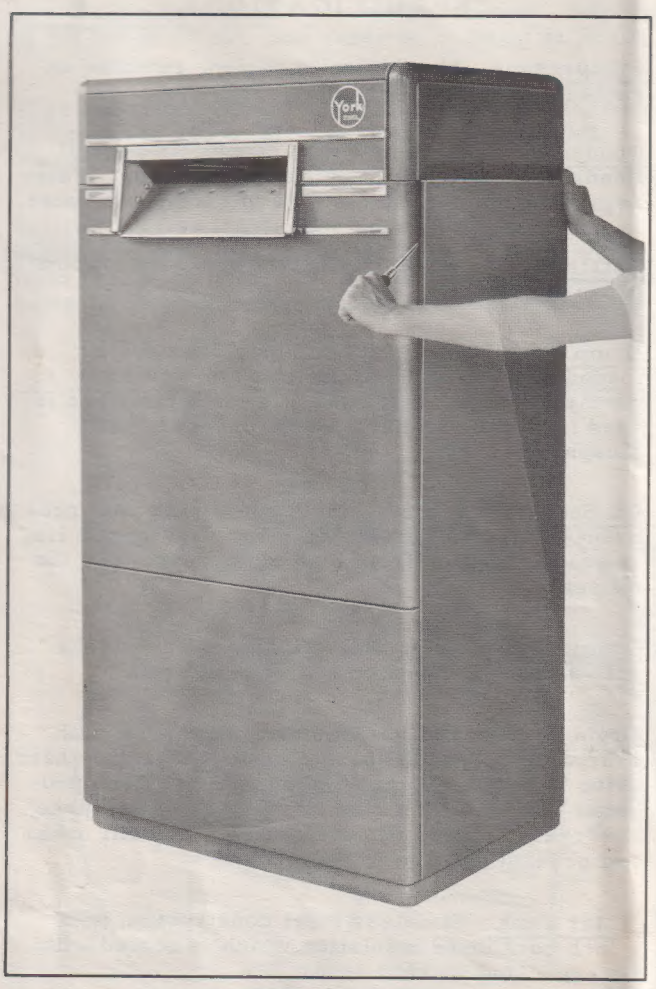


Fig. 2

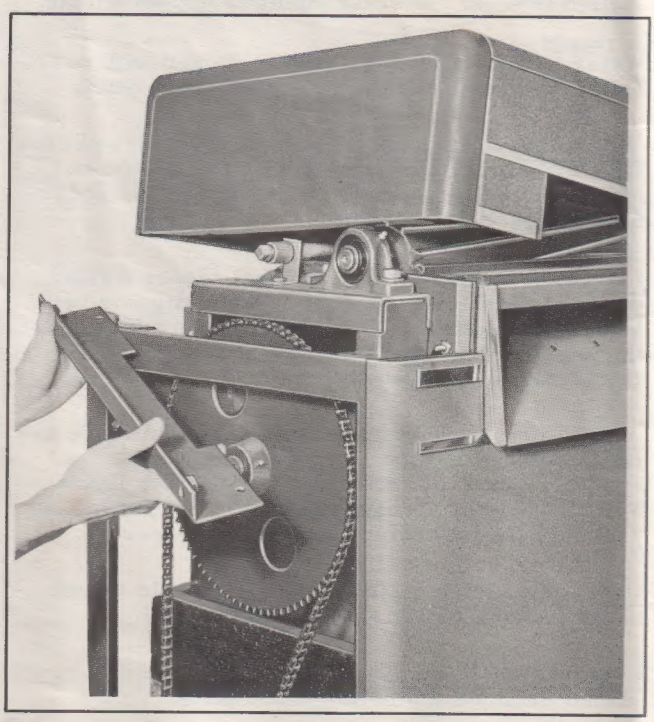


Fig. 3

UNCRATING

To remove the crate, proceed in the following manner.

(a) Remove the nails holding the front section of the crate to the top, bottom, and sides. This will release the front section of the crate. See Fig. 1.

(b) Remove the nails holding the other sections of the crate to the skid.

(c) Remove the four bolts, (two on each end), that fasten the crate to the unit. See Fig. 1.

(d) Slide the crate from the unit and skid, and remove the paper bag.

(e) Cut the metal strap holding the panels in place.

The skid shall be removed in the following manner.

(a) Use a screw driver, as shown in Fig. 2, and carefully remove the side panels. After the spring clips have been disengaged, the panels may be lifted from the unit.

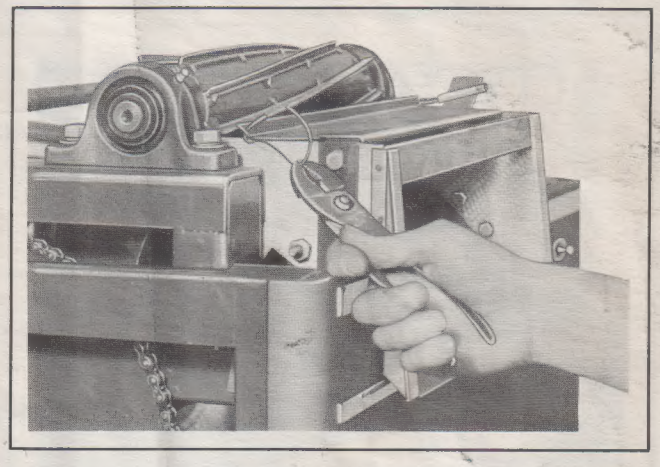


Fig. 4

(b) Remove the four nuts and washers from clamps that fit over the bottom pan, two at each end of the unit.

(c) Before removing the unit from the skid, attach a fitting into the coupling which drains the bottom pan. This coupling is located below the Control Box on the one side of the unit.

(d) Slide the unit off the skid.

For rigidity during shipment, the sides of the crate are secured with angles which are attached to each of the two sides of the unit. These angles must be removed from the unit, the procedure for which follows:

(a) Remove the bolts holding the angles to the top frame of the unit. There is one angle on each of the two sides of the unit, with two bolts in each angle.

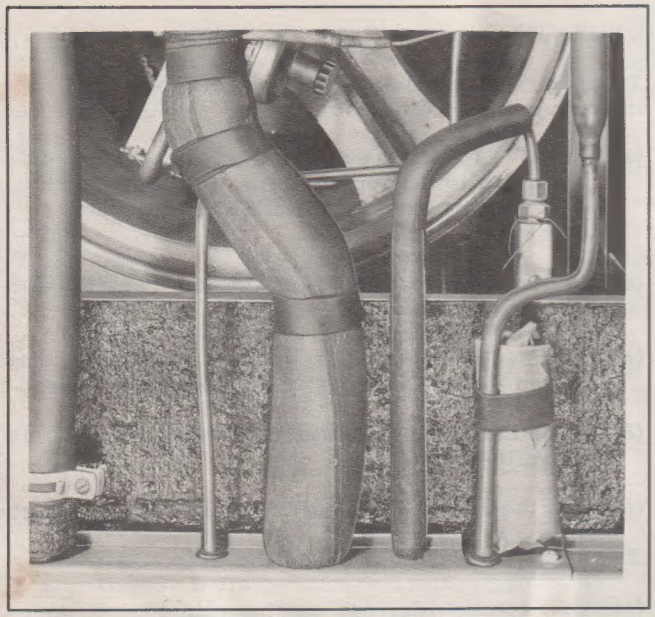


Fig. 5

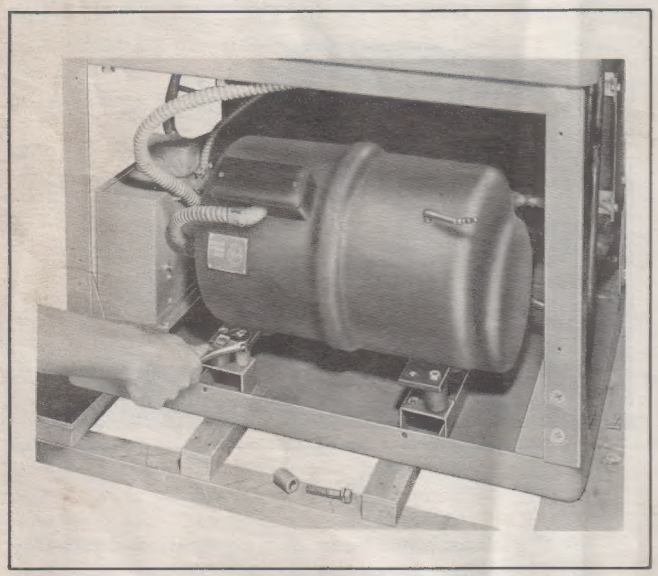


Fig. 6

(b) Lift the top cover of the unit, and remove the two shipping angles, one on each side of the unit. See Fig. 3.

The movable parts are fastened to prevent damage during shipment. Release these parts in the following manner:

(a) Remove the wire, as shown in Fig. 4, to release the Safety Plate.

(b) The Float Ball is wrapped in paper and fastened to the Float Valve Support as shown in Fig. 5. Unpack the Ball and assemble it to the Float Arm.

(c) Remove the four hold down bolts and sleeves from the compressor. See Fig. 6.

SPECIFICATIONS

Compressor - Hermetically sealed, mounted on rubber isolators, 3 cylinder, 1750 rpm.

Condenser - Steel shell with copper finned coil. Heads welded to shell, coil not removable. Water regulating valve controls flow of condenser water.

Refrigerant Control - Constant pressure automatic expansion valve.

Drum Shaft Seals - Oil seal, packless spring loaded seals with neoprene rings and gaskets. A precision lapped ring against a lapped surface is used in sealing from high side pressure to atmosphere.

Oil Seal - Packless spring loaded seals with neoprene rings and gaskets. A precision lapped ring is used in sealing from high side pressure to the oil seal.

Drum Shaft - Steel, self-aligning pillow blocks with sleeve bearings on each end of shaft.

Drum Drive - 1/8 horsepower gear motor with overload protection operates a sprocket and chain drive to rotate drum. A shear pin has been provided which connects the drum shaft to the large sprocket. In case of overload, the pin will shear and prevent damage to the system.

Water Tank - Stainless steel construction with 1 inch corkboard insulation which is coated with waterproofed paint.

Makeup Water - Controlled by a float valve installed in tank. Internal piping is copper tubing.

Water Pump - 230-1-60 self-contained with overload protection, used to spray water on drum.

Water Spray Headers - Two water headers provide for water spray over the drum. One is located before the cutter, and the other is located underneath the scraper blade.

Ice Cutter - Eight stainless steel blades welded on shaft which is supported by self-aligning ball bearings. Cutter is rotated by the increase in thickness of ice on the drum. Slotted holes in frame permit adjustment of cutter clearance.

Ice Collector - Rigidized stainless steel blade and chute remove the ice from the drum, after the ice is loosened by the ice cutter. Warm liquid F-22 circulated through the coil under the blade prevents ice from freezing to the scraper.

Operating Switch - Manual On-Off toggle switch wired in series with starter holding coil.

Compressor Motor Starter - Magnetic type, furnished mounted inside the unit casing.

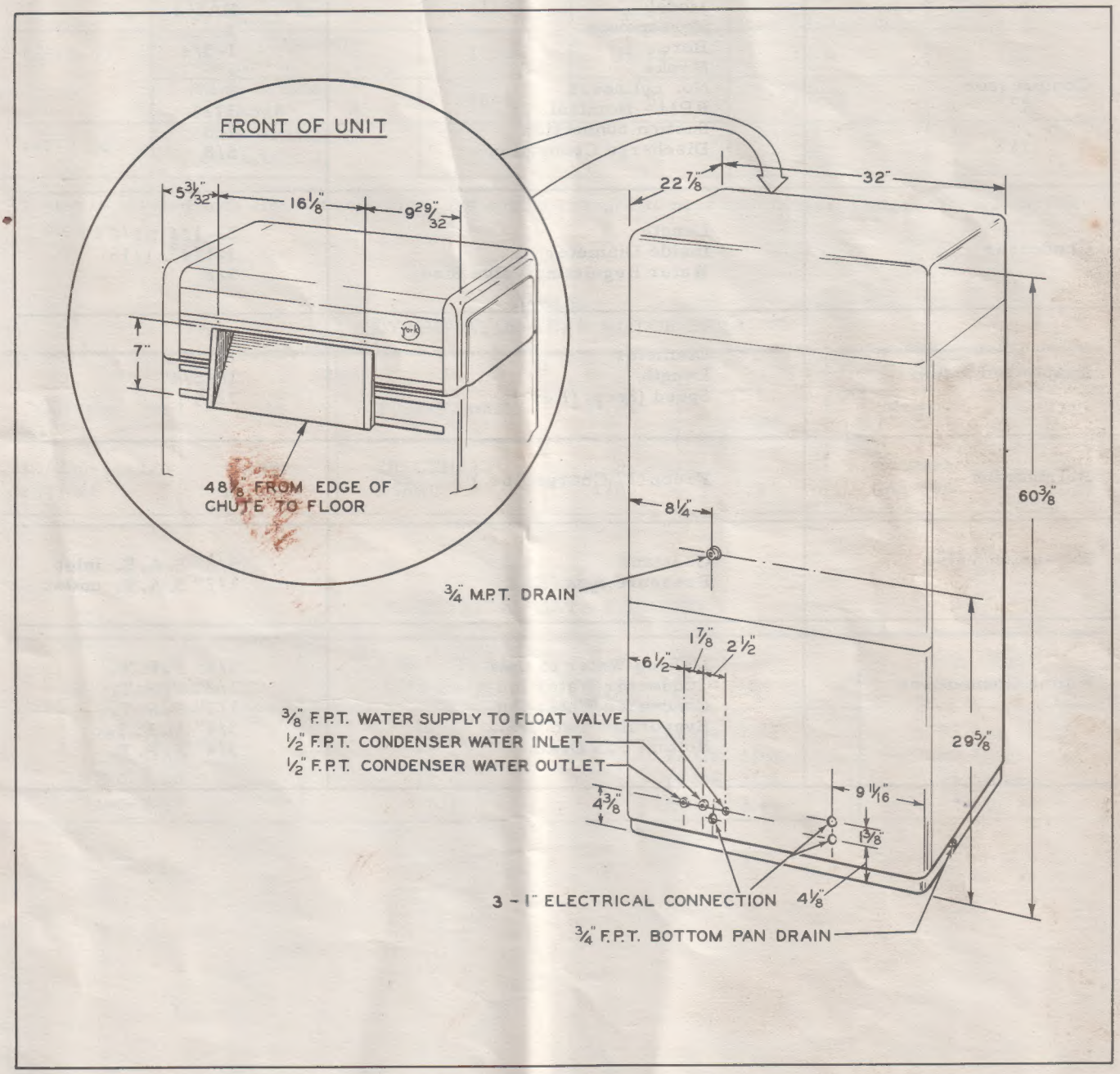
Low Pressure Cutout - Manual reset type. Adjusted to cut out at 28 psi, and ready to be reset at 36 psi.

High Pressure Cutout - Manual reset type. Adjusted to cut out at 265 to 275 psi, and ready to reset manually at 190 to 220 psi.

Safety Controls - Mercury tube switch on a hinged plate to prevent damage to the unit if ice accumulates in the ice chute. A two hour timer repeat cycle is wired in series with a mercury switch for safety precautions and to prevent excessive short cycling.

WATER AND DRAIN CONNECTIONS

All water and drain connections are located on the outside of the unit as shown in Fig. 7. Where water conditions warrant it, a strainer should be placed in the water supply line. The unit will operate satisfactorily with water pressures to the unit of 30 to 75 psi. If the pressure exceeds 75 psi, a pressure reducing valve should be used.



DIMENSIONS

PHYSICAL DATA

Overall Dimensions	Width Depth Height	32 22-7/8" 60-3/8"
Weights lbs.	Net Operating Shipping	790 868 903
Compressor	Model Horsepower Bore Stroke No. cylinders RPM - Nominal Suction connection Discharge Connection	HA364 3 1-3/4 1" 3 1725 7/8 5/8
Condenser	Length Inside Diameter Water Regulating Valve Size	22-1/4 ± 1/8 3-1/4 ± 1/16 5/8
Evaporator Drum	Diameter Length Speed (Secs. /Rev.)	18" 15-3/4" 72.9
Refrigerant	Freon-22 Charge (lbs.)	4
Expansion Valve	Constant Pressure type	3/8" S.A.E. inlet 1/2" S.A.E. outlet
Piping Connections	Makeup Water to Unit Condenser Water In Condenser Water Out Evaporator Pan Drain Bottom Pan Drain	3/8" F.P.T. 1/2" F.P.T. 1/2" F.P.T. 3/4" M.P.T. 3/4" F.P.T.

TABLE 2
ELECTRICAL DATA 3 H.P. COMPRESSOR MOTOR

STARTER		MOTOR DATA			
Current	Manufacturers No.	F.L. Amps.	Heater Size	Trip Amps. 40°	% Above F.L. Amps.
230-1-60	Cutler-Hammer 9584H1361B	15.3	H-34	19.0	124
	Allen-Bradley 3775BX03B	15.3	F-35	18.75	123
208-3-60	Cutler-Hammer 9586H6776	11.3	H-29* F-30	12.6 13.7	112 121
	Allen-Bradley 3775A048	11.3	F-31* F-32	12.75 14.05	113 124
220-3-60	Cutler-Hammer 9586H6776	10.5	H-29	12.6	120
	Allen-Bradley 3775A048	10.5	F-31	12.75	122
440-3-60	Allen-Bradley 709BAAA	5.3	F-25	6.4	121

* Unit is shipped with element indicated, but can be changed to next size larger if necessary due to low voltage.

TABLE 3
EVAPORATOR GEAR MOTOR DATA

Current	Make	Type-Frame	H.P.	F.L. Amps.	Overload Protection	
					Method	Type
115/230-1-60	Century	2R-CSH63G	1/8	1.3	Inherent	KAI
230-1-60	Master	F56RC	1/8	1.4	Inherent	SD35

TABLE 4
ELECTRICAL DATA FOR UNIT

Current Characteristics	Max. Total Line Current	Unit Main Wire Size	Line-Fuse Size Max.
208-3-60	13.4	12 Ga. Min.	35 Amps.
220-3-60	12.6	12 Ga. Min.	30 Amps.
230-1-60	17.4	10 Ga. Min.	45 Amps.
440-3-60	7.7	14 Ga. Min.	15 Amps.

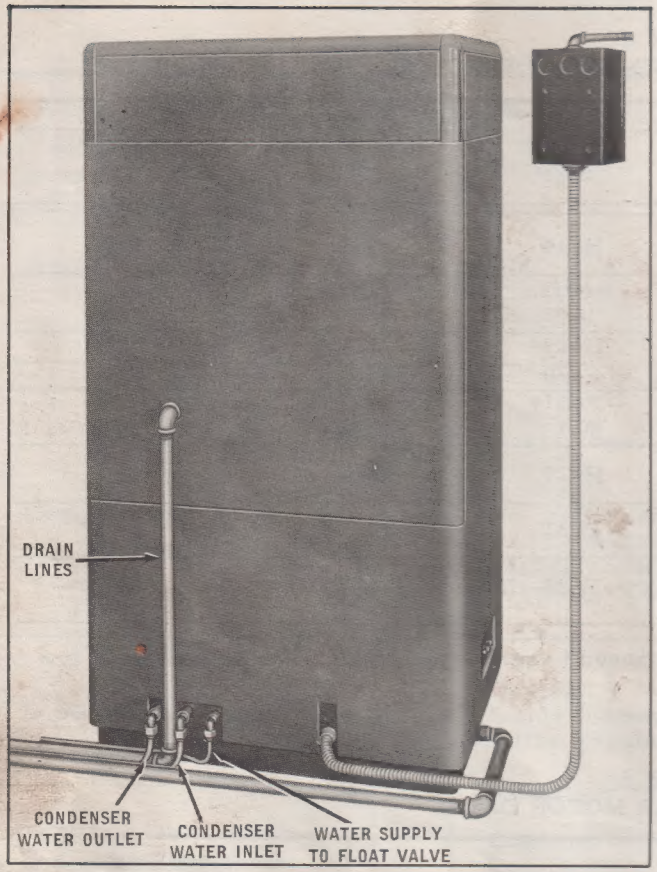


Fig. 7

ELECTRICAL CONNECTIONS

The units are available having the following current characteristics:

(a) 230-1-60
(b) 220/208-3-60
(c) 440-3-60

Check the available current before making connections. Also determine if the electrical service is of sufficient capacity to carry the input to the unit.

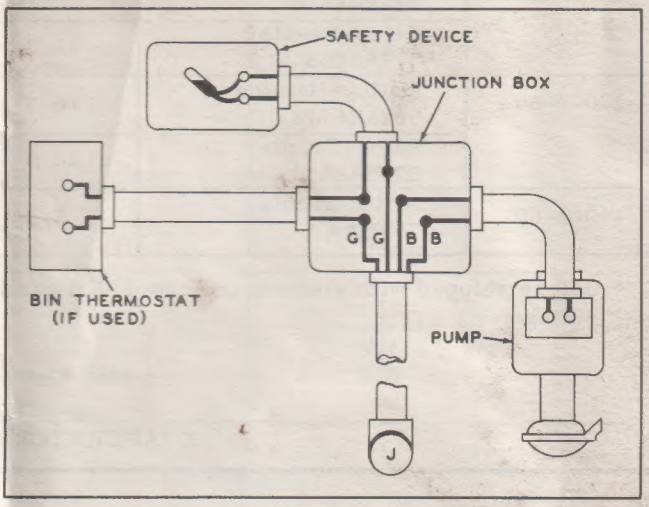


Fig. 8

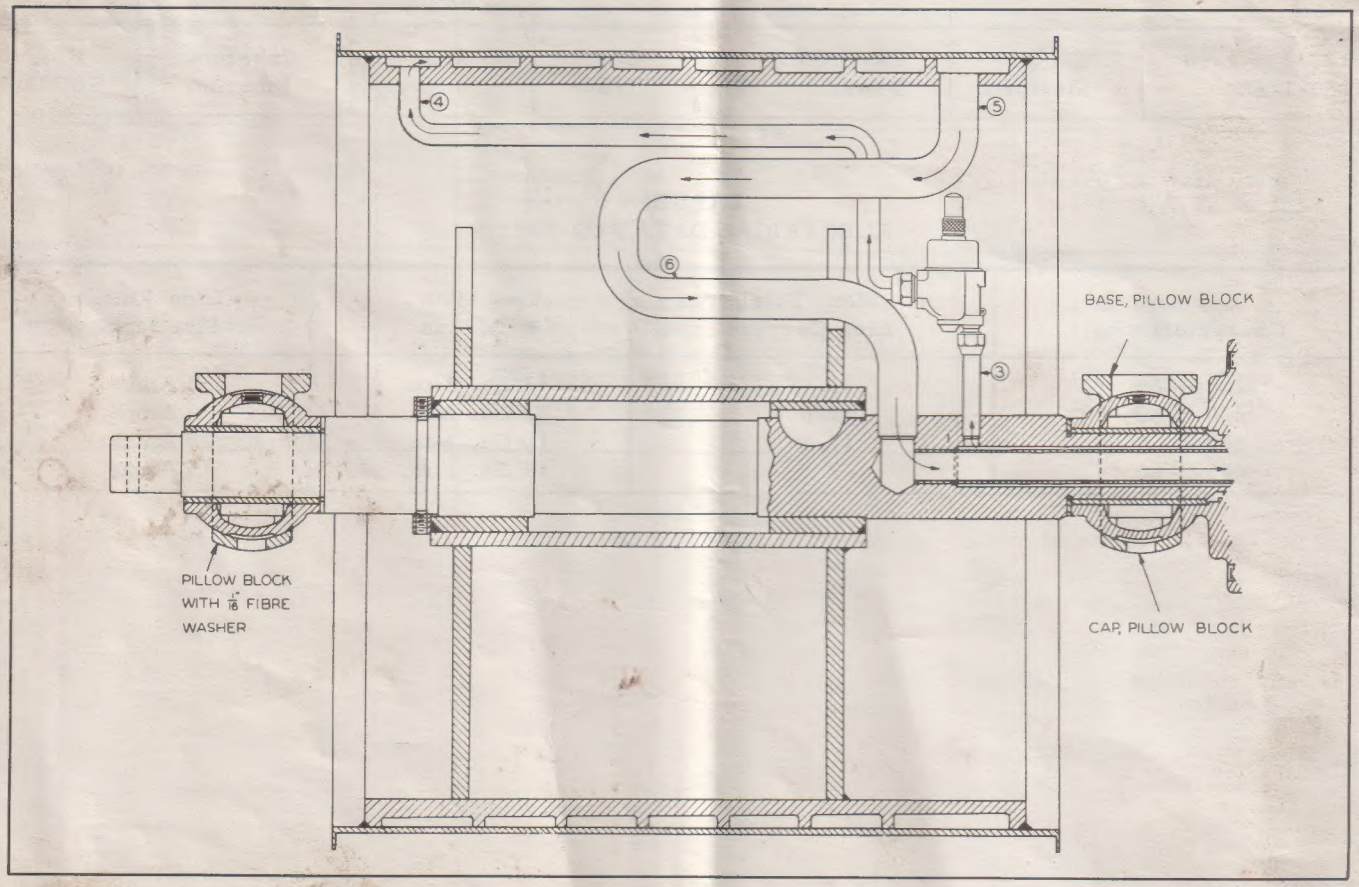


Fig. 9

To comply with the National Electric Code, a fused disconnect switch must be mounted in sight of, and not more than 50 feet from the unit. The line from the unit to the fused disconnect switch may be either flexible steel cable, or rigid conduit, and must be installed in accordance with local code requirements. See Fig. 7.

The unit is equipped with an "OFF" and "ON" switch, High and Low Pressure Cutout Button, and Starter Reset Button on the left side of the unit. All internal connections are completely wired as part of the assembly.

On 440-3-60 units, all components factory mounted. The transformer, switch, and all wiring to the control box must be supplied in the field.

If a cooling tower is used, it must be tied into the control circuit, in order that the cooling tower pump and fan operate when the unit is in operation.

BIN THERMOSTAT

When the ice is discharged from the unit through a closed chute into a covered bin, a thermostat may be used for discontinuing the unit operation when the bin is full. The thermostat is set to cut in at 46 F, and cut out at 38 F. The bulb of the thermostat must be mounted horizontally within the bin in a position where the ice will touch it when the bin is nearly full. To connect the bin thermostat, see Fig. 8.

OPERATION

EVAPORATOR

The cylindrical evaporator drum consists of two shells, an inside steel shell containing a groove, which spirals from the left to the right side of the drum, over which has been shrunk a stainless steel shell. The entire outside surface of this outer shell has been carefully ground and polished to facilitate the freezing of ice on the surface. The construction of the drum with the refrigerant passes is shown in Fig. 9.

REFRIGERANT CYCLE

To trace the path of the Refrigerant-22, refer to Fig. 9, 10 & 11. The refrigerant liquid from the condenser first passes through the liquid loop beneath the ice chute for the purpose of preventing the ice from adhering to the metal chute. After leaving the loop, the liquid passes through a liquid strainer before entering the hub enclosing the drum shaft at location 1 in Fig. 10.

The liquid refrigerant enters the annular space in the shaft through the four openings at location 2 in Fig. 10. From there it travels through the shaft, and leaves at location 3 in Fig. 9 where it enters the constant pressure expansion valve.

From the constant pressure expansion valve, the liquid refrigerant enters the first pass of the drum at location 4 in Fig. 9.

At this point, the refrigerant is predominately liquid, but as it passes from one groove or pass to another in a spiral direction, part of it expands into gas until it reaches the last pass at location 5 in Fig. 9, at which point the liquid should have evaporated, leaving nothing but gas.

From the last pass, the refrigerant gas passes through the suction line to location 6 in Fig. 9, where it enters the shaft. It then passes through

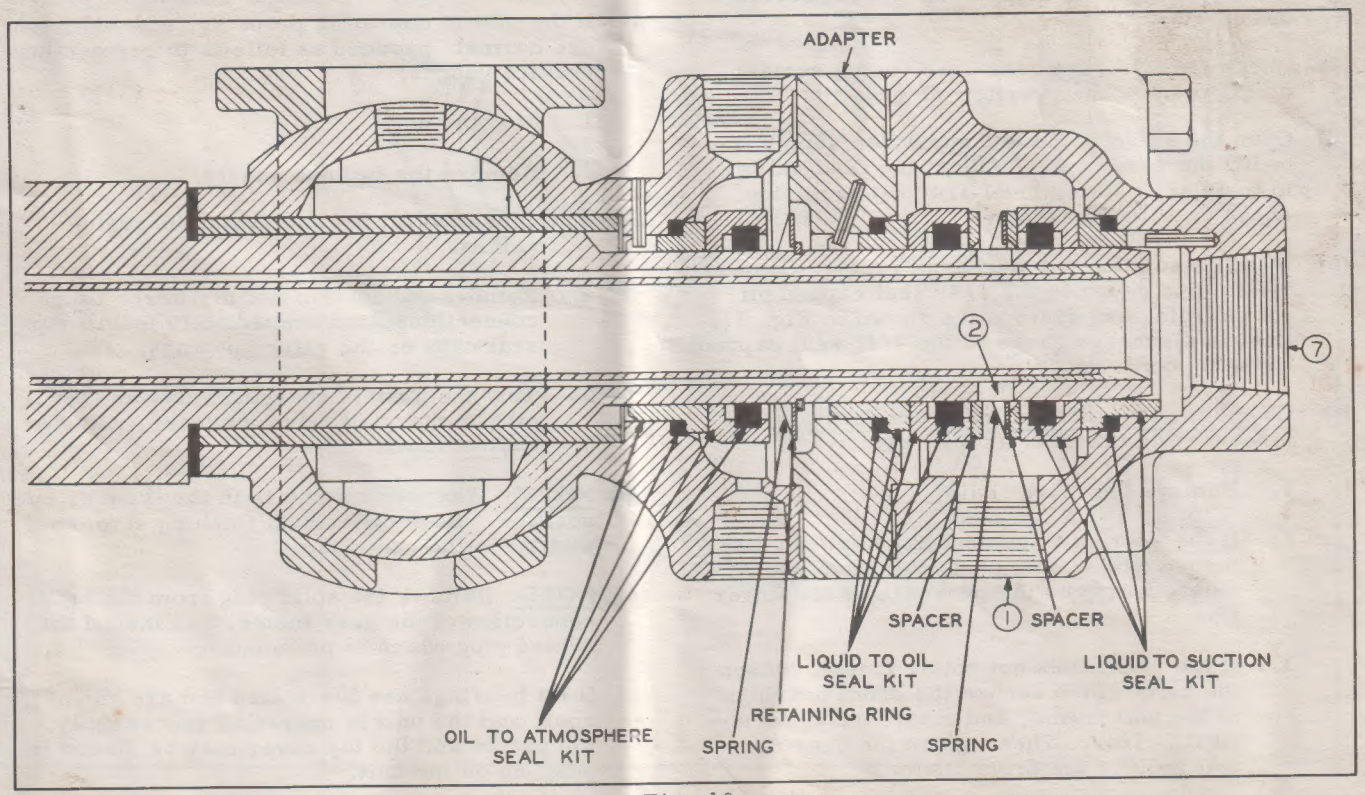


Fig. 10

the center of the shaft and into the hub. From the hub at location 7 in Fig. 10, it passes into the suction line to the compressor.

During normal operation, the constant pressure expansion valve will maintain a pressure in the suction line at the compressor of approximately 37 psi.

TIMER

If the safety plate is lifted by either an accumulation of ice, or, lifted manually, this action will de-energize the timer relay holding coil and start the timer motor.

If the unit does not operate for 2-1/2 minutes, the timer cam will have moved to a position where the timer switch will hold the unit off the line for another hour and 57 minutes, (two hours and 21 minutes if on 50 cycle), regardless if the safety plate recloses. However, if the safety plate is still open at the end of the two hour period, the timer will enter a second two hour period and will not attempt to start until the second two hour period is completed.

STARTING THE UNIT

Upon completion of the water, drain and electrical connections, proceed as follows:

(a) The unit, as received, is fully charged with refrigerant and oil. There are no stop valves in the system.

(b) Fill the oil cups on the evaporator drum bearings by inserting a light wire into the oil reservoir, and slowly flow the oil down the wire into the reservoir, to be sure that all air in the reservoir is displaced. Do not overflow the oil cups.

(c) Check the oil in the gear case, being certain that it is up to the overflow plug.

(d) Open the valve in the makeup water supply line to fill the water tank. Adjust the float valve to maintain a water level 1/4" below the top of the overflow standpipe.

(e) Install a suction and discharge gauge. Connect the suction gauge to the 1/4" seal capped oil pot charging and drain valve shown in Fig. 11, and the discharge gauge to the 1/4" seal capped charging connection.

(f) Check the alignment of the drum bearings before starting the unit, as follows:

1. Remove the drive chain.
2. If the bearing alignment has not been disturbed during shipment, the drum should rotate freely by the pressure of the finger tips.
3. If the drum does not rotate freely, loosen the bolts which secure the drum bearings to the unit frame, and rotate the drum until it is free. Then tighten the bearings and replace the drive chain.

(g) Check the clearance between the ice cutting blades and drum. This clearance should be between .006" and .008" when the drum is warm.

(h) Check the clearance between the scraper blade and the drum. This clearance should be .010" when the drum is warm.

(i) Close the fused disconnect switch, and move the control switch to the "ON" position.

(j) Carefully observe the operation of the unit, for the following:

1. The gear motor should turn the drum one revolution each 72.9 seconds.
2. The water pump should spray water on the drum surface from all openings in both water headers.
3. The water level in the pan should be approximately 1/4" below the overflow.
4. The discharge pressure should be between 200 and 210 psi. The temperature of the water leaving the condenser should be approximately 95 F.
5. The suction pressure should be 37 psi, plus or minus 1 psi, after the unit has been in operation for 15 to 20 minutes.
6. When the unit is operating properly, ice will freeze over the entire surface of the drum.

(k) Check the water piping for leaks. Tighten joints as necessary.

(l) If the unit is operating properly, and conditions are normal, proceed as follows to remove the service gauges:

1. Stop the unit.
2. Remove the two end panels.
3. Close the oil pot and system charging valves.
4. Remove the suction and discharge gauge connections, and immediately install the seal caps on the valve openings.
5. Test the system charging valve and the oil pot charging valve for leaks, using a Halide Torch.

(m) NOTE: The water valve is in the flush or open position. Back off manual flushing stem so that the valve can close.

(n) NOTE: Remove the solid plug from the refill connection of the gear motor, and install the vented plug which is provided.

(o) If all bearings are lubricated and are running cool, and the unit is operating successfully, the panels and the top cover may be placed in position on the unit.

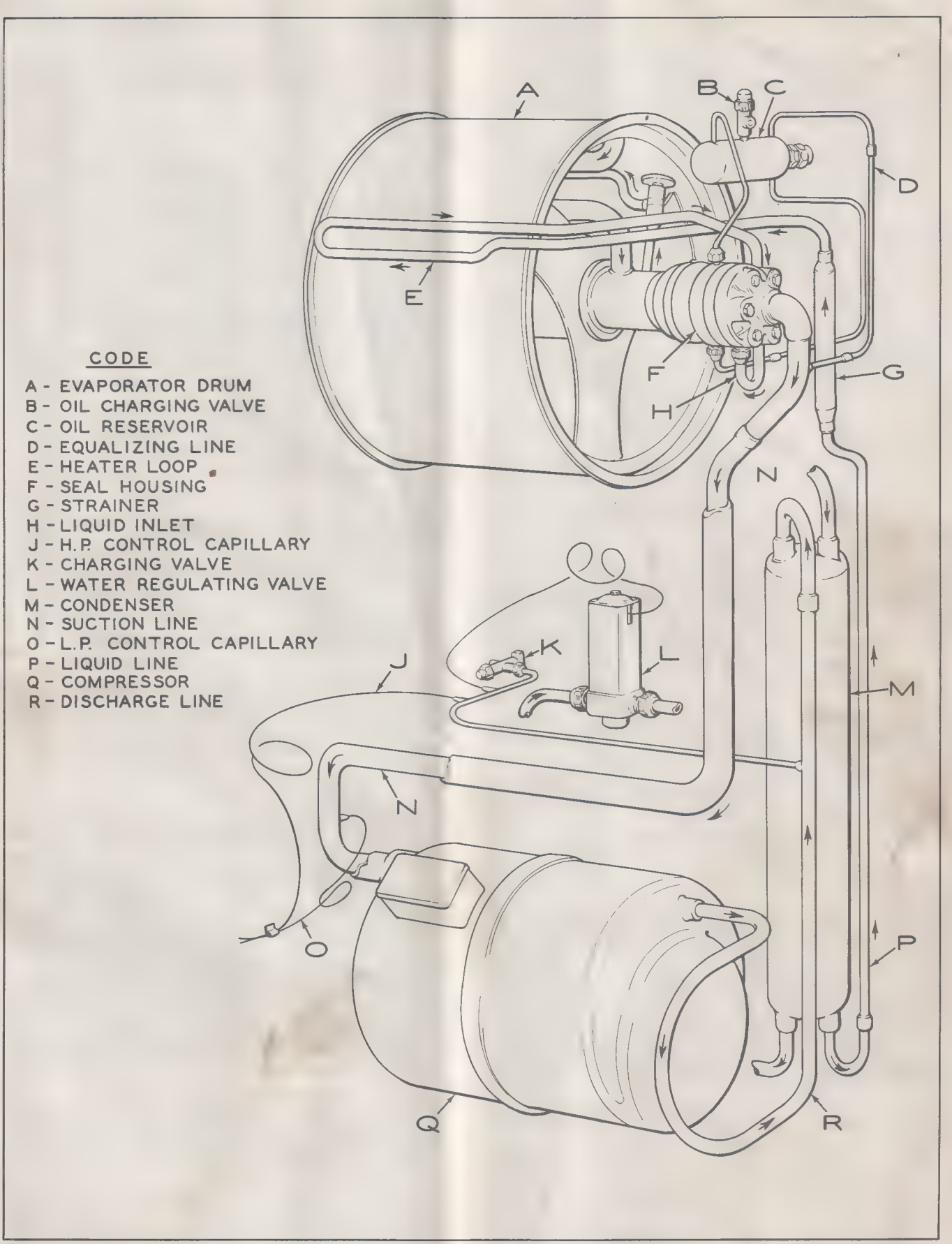

CODE
A - EVAPORATOR DRUM
B - OIL CHARGING VALVE
C - OIL RESERVOIR
D - EQUALIZING LINE
E - HEATER LOOP
F - SEAL HOUSING
G - STRAINER
H - LIQUID INLET
J - H.P. CONTROL CAPILLARY
K - CHARGING VALVE
L - WATER REGULATING VALVE
M - CONDENSER
N - SUCTION LINE
O - L.P. CONTROL CAPILLARY
P - LIQUID LINE
Q - COMPRESSOR
R - DISCHARGE LINE
A
B
C
D
E
F
G
H
N
K
L
J
M
N
O
P
Q
R

Fig. 11

CAPACITY

The capacity of the unit is approximately 1 ton of ice in 24 hours, with 70 F make-up water, and 95 F water leaving the condenser. With other water temperatures, the ice capacity will be in accordance with the following table:

CAPACITY—POUNDS PER 24 HOURS

Ambient Air Temp., °F.	Water Temperature, °F.						
	40°	50°	60°	70°	80°	90°	100°
40° — 100°	2410	2280	2145	2012	1880	1750	1615

Entering Make-up Water Temperature-°F.	Lbs/Ice/30 Minutes
40	50
50	47.3
60	44.7
70	41.6
80	39
90	36.4
100	33.8

The proper method of checking capacity is to accumulate several harvests of ice in a suitable container for a period of 30 minutes, then compare with the capacity table.

MAINTENANCE

LUBRICATION

The following parts of the unit should be checked for lubrication as indicated, and proper lubricants added when necessary.

(a) Evaporator Drum Shaft Bearing
(b) Ice Cutter Bearings
(c) Chain Drive
(d) Gear Motor
    1. Century
    2. Master

Evaporator Drum Shaft Bearings - Fill the oil cup with SAE20 every six months. The oil should be flowed down a bent wire into the bearing. The wire should be moved up and down as the oil is flowing into the bearing to be certain that any air in the bearing reservoir is displaced by oil.

Ice Cutter Bearings - Grease these bearings once each six months with a grease gun. Do not use oil, as these are ball bearings. Add grease slowly, with the shaft revolving, until fresh grease appears. The manufacturer of these bearings recommends the following lubricants:

Atlantic Refining Co.	Atlantic No. 64.
Standard Oil Co.	Standard No. 2.
Texas Co.	Regal Star Fak No. 2.
Socony Vacuum Oil Co.	Gargoyle BRB No. 2.
Gulf Oil Corp.	Gulf Precision No. 2.

Chain Drive - A light oil, preferably SAE10, should be brushed on the chain drive once every month.

Gear Motor - The unit may be equipped with either a Century or Master Gear Motor. To lubricate, proceed as follows:

Century Gear Motor and Reducer - Before starting this motor, check the oil in the gear case to be sure it is up to the overflow plug. The proper amount of oil was provided at the factory, for room temperatures from 50 to 100 F, (unless otherwise ordered). After each 500 to 1000 hours of operation, the gear case should be drained of all lubricant, and then refilled, (while the motor is not operating), to the overflow plug. It should be examined occasionally during the first few hundred hours, to be certain that no leakage develops, or, other abnormal conditions exist.

Replacement oil should be of the highest grade, and especially adapted for worm gears. The following lubricants are recommended for room temperatures from 50 to 110 F.

E. F. Houghton Co.	Worm Gear Oil M. E.
Shell Petroleum Corp.	Valve No. 79
Sinclair Refining Co.	Opaline Gear Lubricant BX.
Standard Oil Co. of N. J.	Valesco No. 150
Standard Oil Co. of Ind.	Capitol W Cylinder Oil
Pure Oil Co.	C. Mineral Oil

The outside motor bearing on the Century geared motor is lubricated with Alemite No. 38, or Texaco Star Fak No. 2. The screw plug must be removed before the grease can be added.

Master Gear Motor and Reducer - The proper oil level must be maintained in the gear case at all times. The correct level is indicated by the hex head plug. Frequent inspections, with the motor not operating, and preferably when warm, should be made by removing the plug to determine that the oil level is being maintained. If the oil level is low, additional lubricant must be provided through one of the upper openings until it comes out of the oil level hole which must be opened for this purpose. Lubricant should be drained, and the gear case refilled after every 750 hours of operation under normal conditions, and more frequently when operating continuously, or, at high temperatures.

The motor shaft bearing is lubricated by oil in the gear case. The rear motor shaft bearing must be lubricated separately, with a good grade of bearing grease.

The following lubricants are recommended by the Master Electric Co. for gear head motors at normal room temperatures (50 to 105 F):

Gulf Refining Co.	Gulf I. C. Oil B
Pure Oil Co.	C Mineral Oil
Shell Petroleum Corp.	Valve No. 79
Sinclair Refining Co.	Opaline Gear Lubricant BX
Standard Oil of Ind.	Stanoil No. 200
Standard Oil of N.J.	Valesco No. 150
Texas Co.	Thurban SAE90
Socony Vacuum Oil Co.	Mobiloil "CW"

For temperatures from 40 to 50 F, use one grade lighter.

WATER SYSTEM CLEANING

The frequency of cleaning the water pan, and/or the drum, depends upon the water supplied to the unit, and the dust and dirt present. Units supplied by water with high mineral concentrations will require more frequent cleaning than those using soft water. In any case, it is recommended that the water from the pan be drained, the drum defrosted, and the entire water circuit flushed and refilled at least each 30 days.

If considerable dust and dirt accumulates in the pan, it may be advisable to clean it more frequently.

Cleaning the Water Circuit - With certain supply waters, a considerable amount of the mineral will be concentrated in the water pan. When this deposit is soft, it can be removed by flushing and draining.

When the deposit becomes hard and adheres to the surface of the drum, thus preventing the removal of ice from the drum in a normal manner, or, closes the holes in the water distributing headers, it will be necessary to remove this deposit using Sulfamic or Acetic Acid.

Sulfamic Acid is highly recommended for cleaning the water circuit. Generally a 2% to 6% concentration is ideal for most mineral deposits and scale formation removal.

The water sump tank at normal operating level holds approximately 4-3/4 gallons of water. Therefore, approximately 1-1/2 pounds of Sulfamic Acid powders will be sufficient for most cleaning purposes. In cases where the scale removal is more difficult, the concentration of Sulfamic Acid may be increased. However, at no time should more than three pounds of the Sulfamic Acid powders be added to the sump tank, as strong concentrations will result in copper plating of the stainless steel components.

To clean the Water Circuit using Acetic Acid in place of Sulfamic Acid, proceed as follows:

(a) Stop the unit by means of the toggle switch.

(b) Remove the front, end, and rear panels, and the front and rear splash guards. Drain the water pan by unscrewing the overflow drain pipe, and closing the water supply valve to prevent refilling.

(c) Disconnect and tape the electrical supply wire from the center (No. 2) compressor motor terminal.

(d) Replace the overflow pipe in the water pan.

(e) Open the water supply valve, and fill the water pan about half full, and pour 1/2 gallon, (4 pounds) of 99% concentrated acetic acid into the pan.

NOTE: If 99% concentrated acetic acid is not available, use that of a lesser concentration, but increase the amount proportionately. For example, if 26% acetic acid is used, the amount would be $\frac{99}{26} \times 4$ pounds = 15.4 pounds.

(f) Fill the water pan to the normal level.

(g) Close the power switch and start the unit. NOTE: Since the supply wire has been removed from the compressor, (Par. "c"), the compressor will not operate. However, the drum will revolve and the pump will circulate the acid through the water circuit.

(h) Continue operating in the above manner for approximately 30 minutes, or, until all deposits have been removed.

(i) Stop the unit and drain the water pan, as in Par. "b", and flush with clean water. Refill with fresh water, and place the unit in operation.

Cleaning the Evaporator Drum - The cleaning of the entire water circuit by the use of acid, as described above, usually cleans the surface of the evaporator drum. It is possible however, for the drum surface to become dirty, or coated, even though there is little or no deposit of carbonate in the water pan.

When the drum becomes coated, the ice does not peel from the drum easily. When this occurs, clean the drum surface with No. 200 water type sandpaper. Keep the drum wet when cleaning, then flush thoroughly.

Another approved cleaning method, is to swab the drum surface with a 15% solution of Nitric Acid. Remove the chain on the drive in order that the drum may be revolved manually while cleaning.

CAUTION: Under no circumstances may Nitric Acid be placed in the Water Pan or circulated by the pump.

NOTE: After cleaning the drum, flush thoroughly, drain the water pan, and refill with clean water. If the presence of grease or an oily coating is noted on the surface of the drum, the surface should be scrubbed with a household detergent, and thoroughly rinsed.

REFRIGERANT CHARGING

The unit is charged at the factory. If, for any reason it is suspected that the unit has lost part, or all of its charge, the leak must be repaired, and the unit must be evacuated and re-charged.

If the ice is not forming across the entire surface of the drum, a Refrigerant-22 pressure gauge should be installed on the oil pot charging valve,

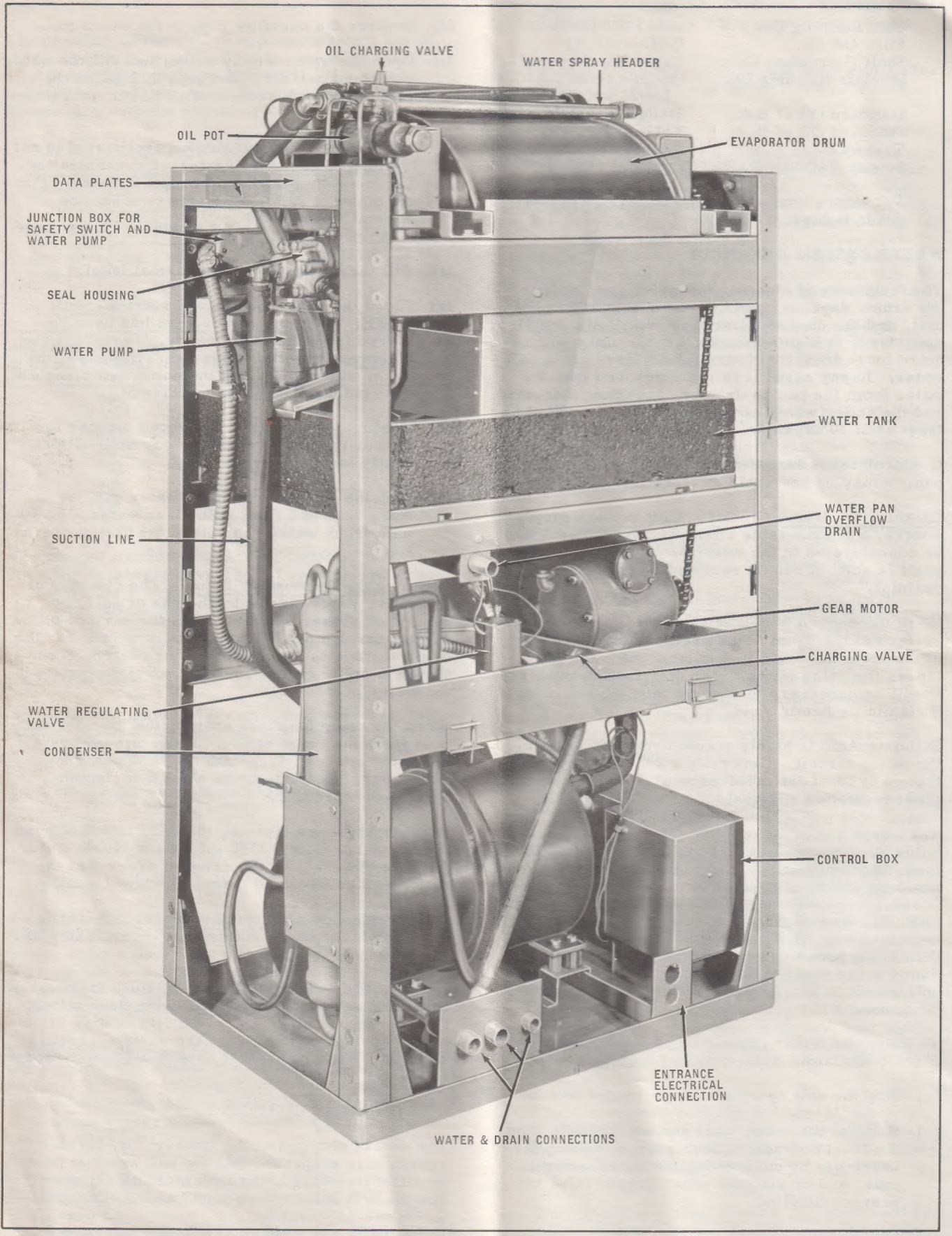

OIL CHARGING VALVE
WATER SPRAY HEADER
OIL POT
EVAPORATOR DRUM
DATA PLATES
JUNCTION BOX FOR SAFETY SWITCH AND WATER PUMP
SEAL HOUSING
WATER PUMP
WATER TANK
WATER PAN OVERFLOW DRAIN
SUCTION LINE
GEAR MOTOR
CHARGING VALVE
WATER REGULATING VALVE
CONDENSER
CONTROL BOX
ENTRANCE ELECTRICAL CONNECTION
WATER & DRAIN CONNECTIONS

Fig. 12

as described under STARTING THE UNIT. This gauge will indicate the suction pressure which should be 37 psi, plus or minus 1 psi. If the suction pressure is low, and ice is not forming across the entire surface of the drum when the constant pressure expansion valve is properly adjusted, insufficient refrigerant is indicated. Or, if it is determined that the unit has lost the charge, the leak must be repaired immediately. Refer to Fig. 11, and apply corrective measures as covered in Instruction 2N-1, (Leak Testing, Evacuating, Dehydrating, Refrigerant Charging).

SHUTTING DOWN FOR WINTER

The minimum operating or standby temperature surrounding the unit is 40 F. Where the ambient temperature is 32 F, precautions must be taken to avoid freezing. The unit should be placed in a heated enclosure, or, if it is to remain inoperative, it may remain in sub-freezing temperature if the water piping, water pan, and pump are completely drained, and the water supply to the unit is closed.

OWNER'S ACCEPTANCE

Before leaving an installation, explain the operation and care of the unit to the owner, or his designated representative.

Explain the necessity for periodic flushing and cleaning to insure efficient operation of the unit.

The greater the content of encrusting solids in the water supply, the more important this cleaning becomes.

Be certain that the warranty registration card has been completed, and sent to the factory to register the warranty.

Secure the owner's acceptance of the installation.

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